

Remote Sensing Information Gateway* and Environmental GeoWeb Service**

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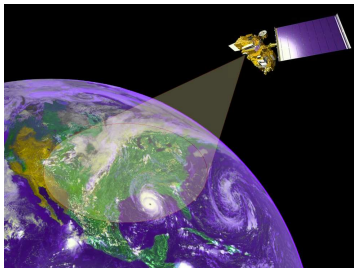
**Gary Walter, P.I., ORD/NERL/AMD

**Ravi Nair, Project Lead, OEI

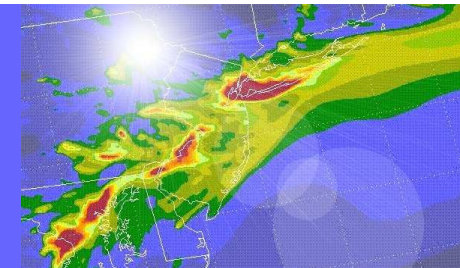


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A Description of Two Tools: RSIG and EGS



■ Remote Sensing Information Gateway (RSIG)

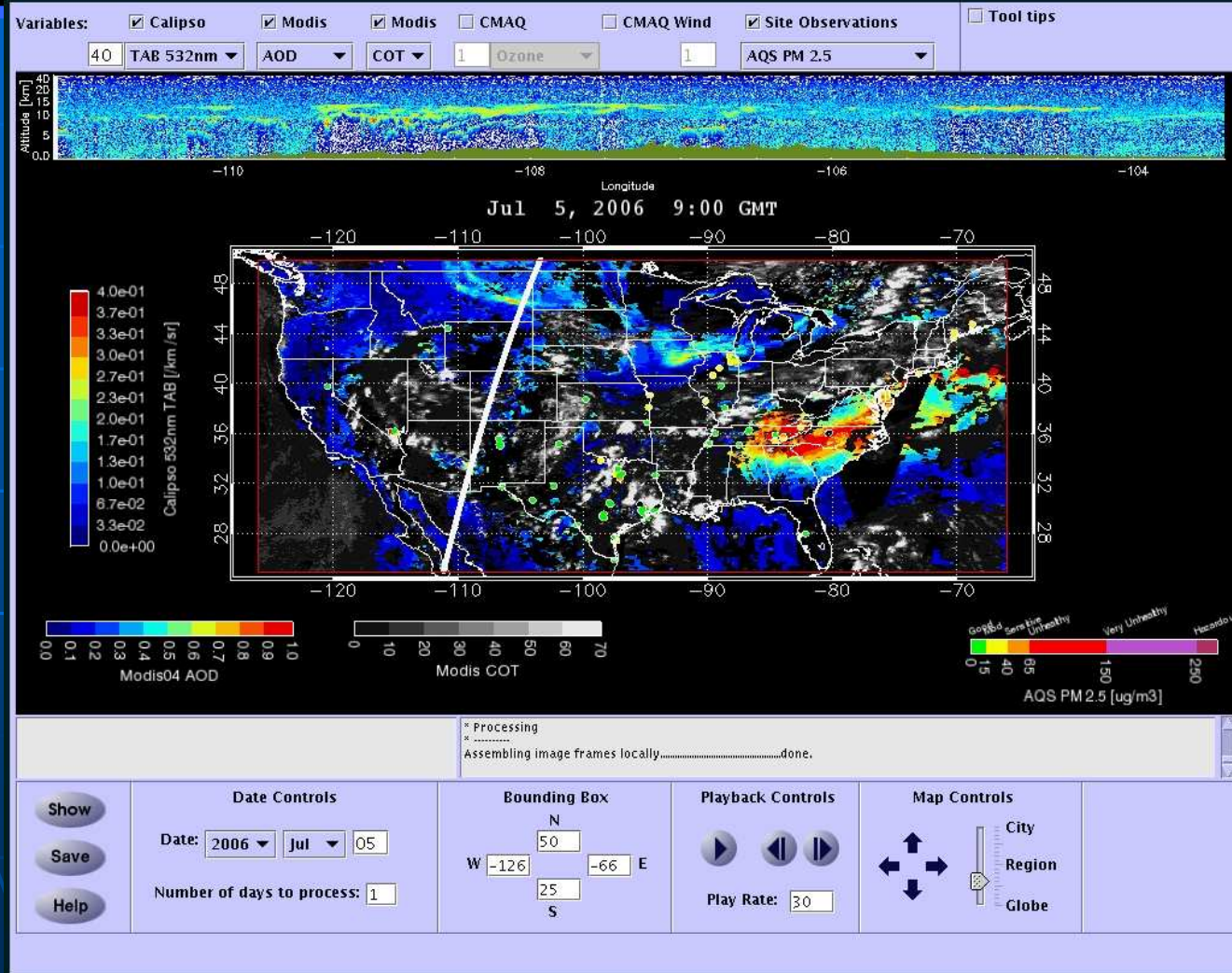
- Subsets large (multi-terabyte) datasets at their source
- Aggregates selected data into a single file
- Handles datasets in a variety of formats to users
- Provides access to hard to get datasets
- Requires building partnerships with data providers
- Focus: Targets large datasets.

■ Environmental Geo-Web Service (EGS)

- Easy access to wide variety of public environmental datasets
- Builds an indexed catalog on EGS of available govt. and govt. sponsored datasets, updated daily
- Features key word search for locating data
- Accesses and maps datasets from the source
- Focus: Targets a wide array of publicly available datasets



RSIG Graphical User Interface:



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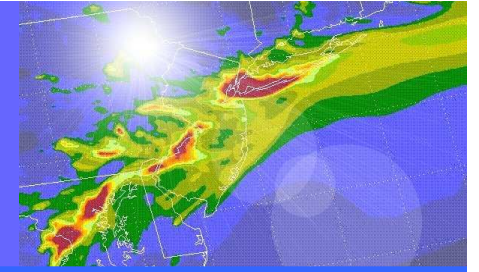
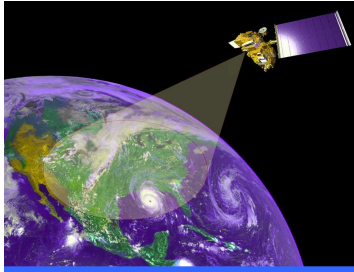
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MODIS (Goddard) Connection

- Achieved a major milestone with the successful connection and demonstration of EPA's RSIG server to NASA Goddard Space Flight Center's (GSFC) Ipweb MODIS data server in April 2007.
- This achievement involved collaborating with NASA to analyze the MODIS data format (HDF), the server's architecture, and the connectivity requirements for transferring data over standard Internet (HTTP) lines.

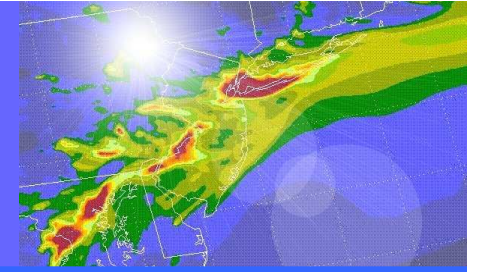
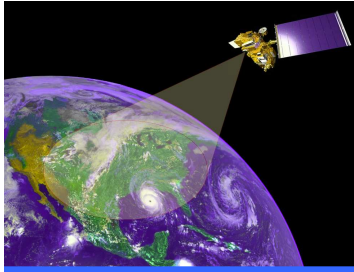




RSIG: Next Steps

- Adapt RSIG to support air accountability projects developed through EPA's Advanced Monitoring Initiative.
 - E.g., the 3D-AQS project studying Clean Air Interstate Rule air quality measures.
- Evaluate RSIG's ability to support additional researchers and Air program activities, such as evaluating exceptional events, e.g. large fires, and various modeling applications, e.g. VERDI.
- Integrate with Environmental GeoWeb Service.
- Link RSIG to EPA Portal and Science Connector.

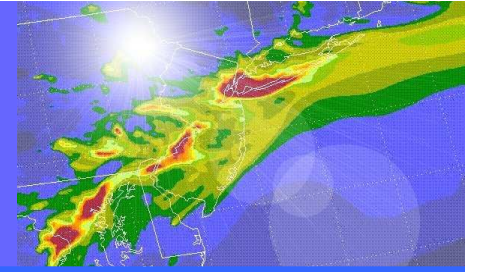
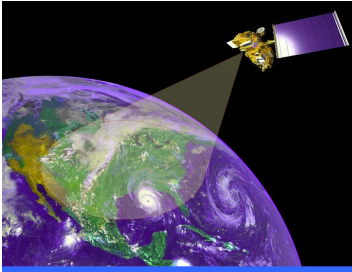




RSIG: Next Steps

- We are also excited about bringing in additional data sets to support researchers, current focus areas include:
 - Nitrogen Dioxide, Nitrous Oxide
 - OMI/AURA Data (from NASA/Goddard): Ozone, Nitrogen Dioxide, Ozone, Sulfur Dioxide
 - Schiamachy Data (Dutch Meteorological Institute): Nitrogen Dioxide, Sulfur Dioxide





Environmental GeoWeb Service

(<http://gds.rtpnc.epa.gov>)

(An ORD-sponsored project in collaboration with OEI)

Gary Walter, P.I. ORD/NERL/AMD

Ravi Nair, Project Lead, OEI



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The top banner of the slide features two images. On the left, a satellite is shown in orbit above a view of Earth, with a beam of light directed towards the planet. On the right, there is a weather map or satellite image showing cloud patterns and a bright light source, possibly the sun, in the upper right corner.

Objectives

- Build a tool for easy access and visualization of earth science informational resources of EPA and other governmental organizations worldwide to enable:
 - Better scientific research for environmental protection; and
 - Improved environmental decision-making.



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The top banner of the slide features two images. On the left, a satellite is shown in orbit above a portion of the Earth, with a beam of light directed towards the surface. On the right, there is a weather map or radar image showing various atmospheric patterns in shades of green, yellow, and red.

Goal

- Catalog earth science data resident in government-owned or –sponsored public analysis and display systems
- Provide capability to search for the needed data from the catalog
- Provide a unified state of the art 3D visualization interface to all catalogued data regardless of source or protocol

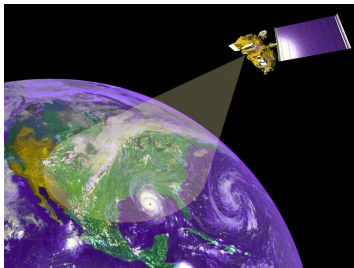


The top banner of the slide features two images. On the left, a satellite is shown in orbit above a portion of the Earth, with a beam of light directed towards the surface. On the right, there is a weather map of a coastal region, likely the Gulf of Mexico, showing various weather patterns with color-coded intensity scales (green, yellow, red, and purple).

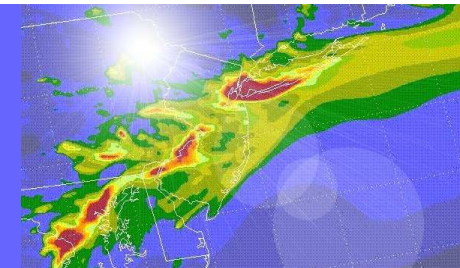
Details:

- Web-based Graphical User Interface (GUI)
- Simple keyword search
- Data set browsing and meta data display
- One click visualization (including time-step animation)
- State of the art 3D visualization using Google Earth
- Subset and download (OPeNDAP only)
- Stores catalogs from remote sources in an XML database
- Automatically synchronizes and updates catalogs daily





Status and Future Plans

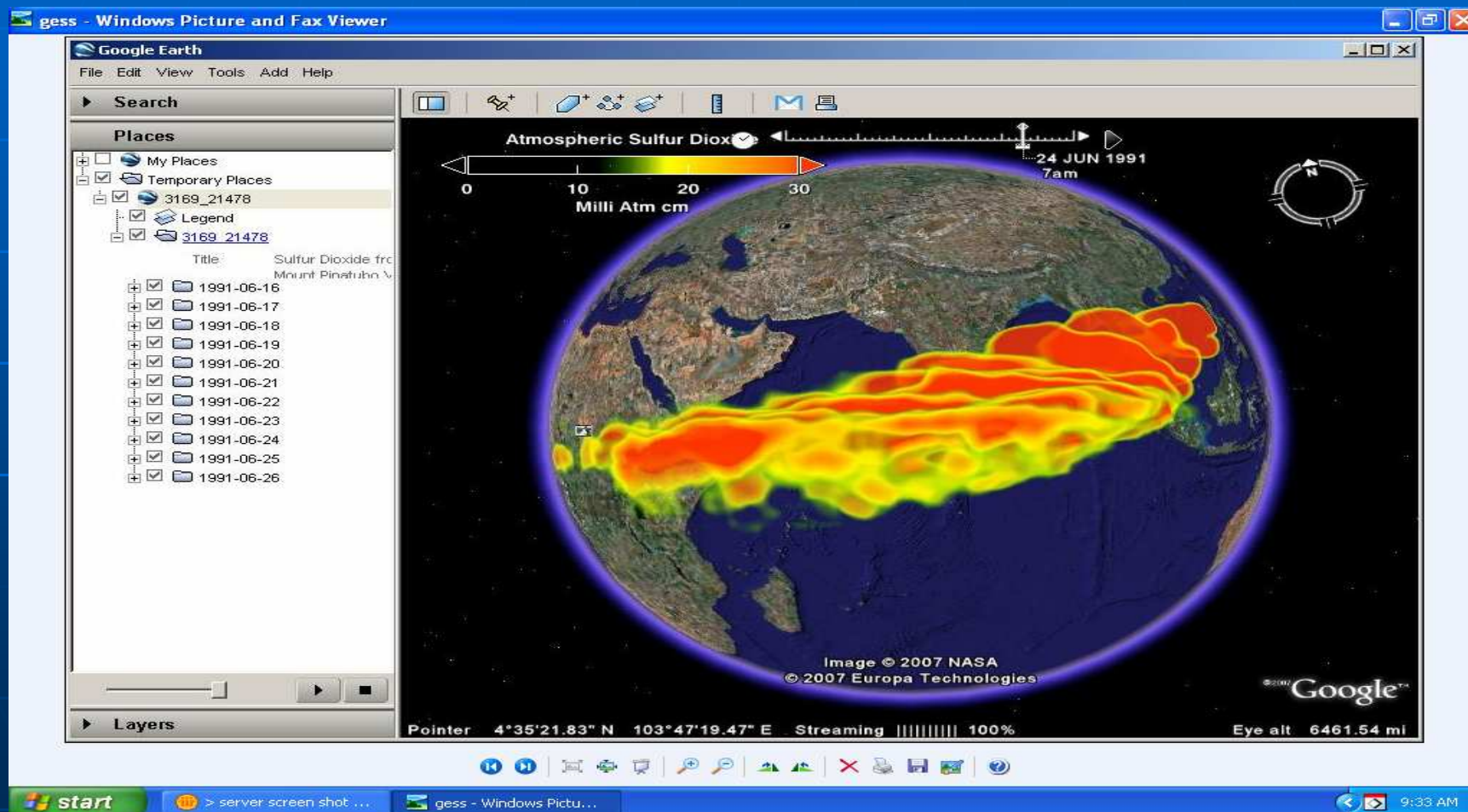
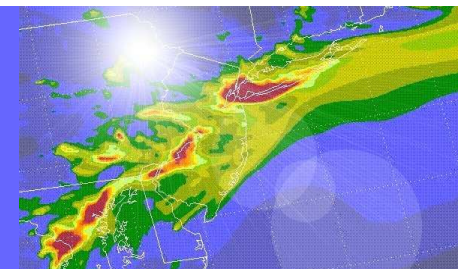


- Operational Status
 - Available in the Intranet environment for EPA researchers.
- Future Plans
 - Expand data sources and protocols supported
 - Create a unified WMS catalog for access by any GIS capable client such as ArcGIS, NASA World Wind, etc.
 - Deploy an internet version of the service for external users.



Sample Display

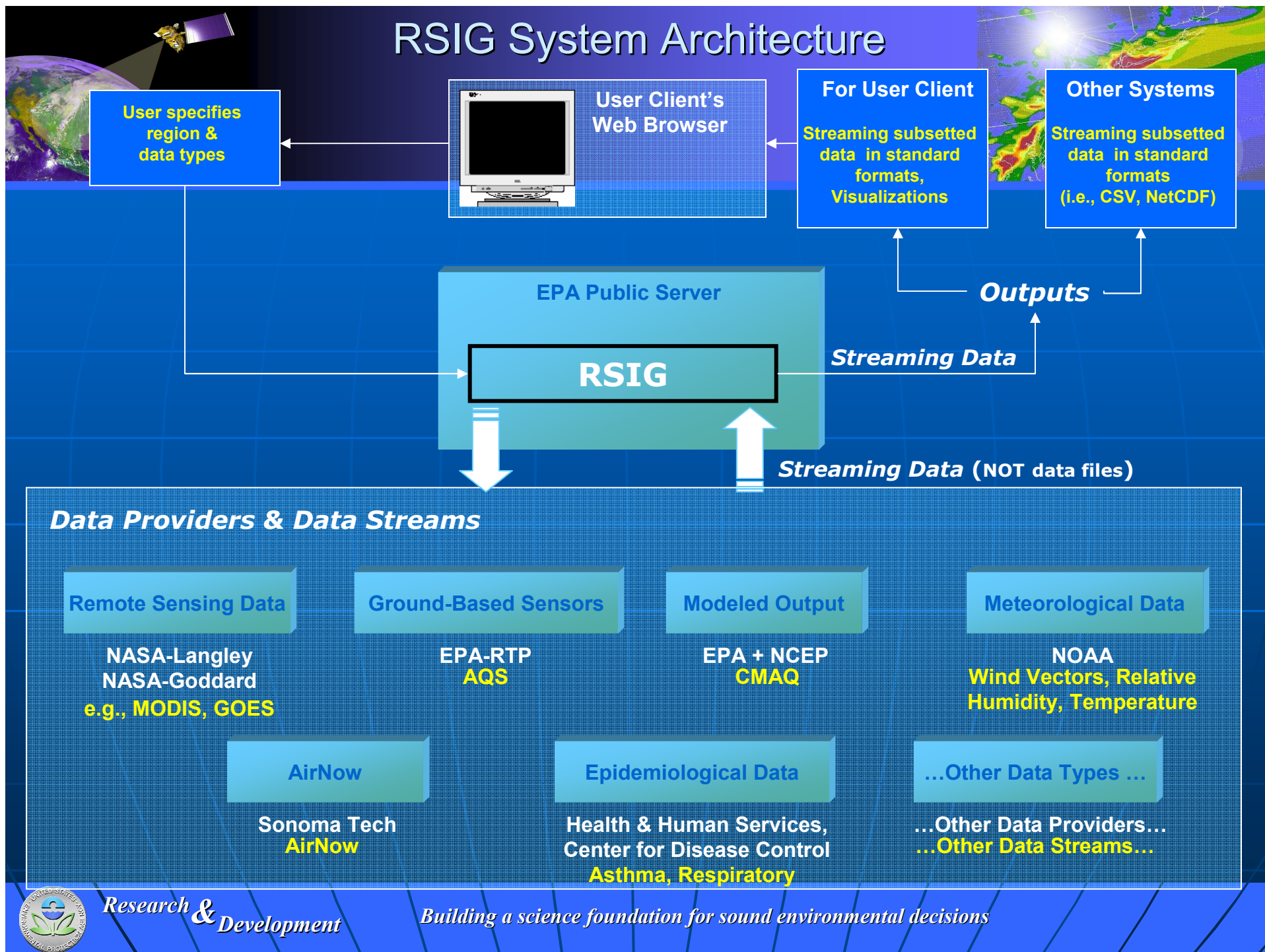
levels of sulfur dioxide in the
atmosphere after
the volcanic eruption of Mt. Pinatubo in the
Philippines



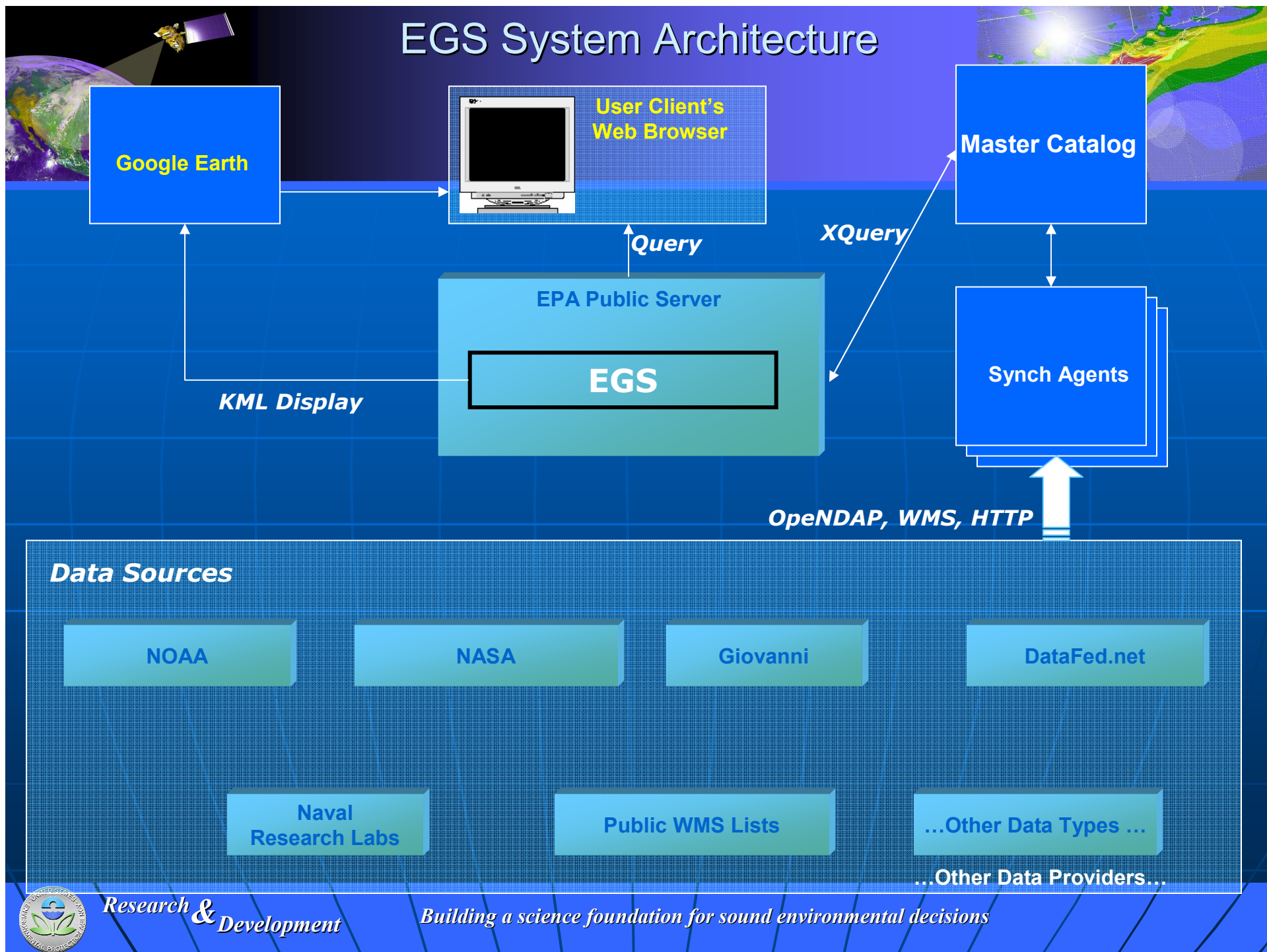
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RSIG System Architecture

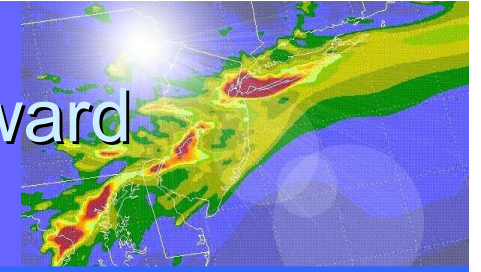
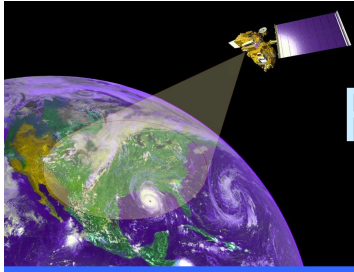


EGS System Architecture



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RSIG / EGS Integration Path Forward

- RSIG-EGS exchange data through standard protocols
- Pilot GEOSS Service-Oriented Architecture
 - Comply with EPA GEOSS Technical Architecture
 - Increase “component/function based” system design and functionality (data discovery, cataloging, subsetting, compositing, visualization, conversion, storage)
 - Use OGC standards for geo-spatial data discovery, subsetting, and transfer (WCS, WMS, WFS)
 - Integrated with EPA Enterprise Architecture (secure external access)
- Expand partnerships with data providers (NASA, NOAA, NRL, EU)
- Support increasingly common desktop visualization tools (Google Earth, Microsoft, NASA World Wind)

